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ABSTRACT

Structural-interactive vocational theory shows that both aspirational and work histories have continuity over the life span and provide useful explanations of stability and change. This paper suggests some implications of structural-interactive theory for the study of adult development. Common principles of structural-interactive theories are outlined, and the importance of career data in daily life and research is discussed. The relationship of career continuity to personality is explored, and stability and change are discussed in terms of interactive career theories. Research is reviewed to support assumptions of interactive career theory as well as personality and learning theory. Implications of vocational theory for the study of adult development and for providing mental health and vocational services to both younger and older adults are highlighted. (JAC)

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SOME IMPLICATIONS OF CAREER THEORY FOR ADULT DEVELOPMENT AND AGING

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Paper presented at the Annual Convention of the American Psychological Association, Washington, DC, August 23-27, 1982.

ABSTRACT

Structural-interactive vocational theory (Holland, Lofquist and Dawis, Roe) shows that both aspirational and work histories have continuity over the life span and that structural-interactive theories provide useful explanations of stability and change. Some implications of this theory are suggested for the study of adult development and the provision of assistance for adults, ~~are suggested.~~

SOME IMPLICATIONS OF CAREER THEORY FOR ADULT DEVELOPMENT AND AGING

I have had a great deal of difficulty in preparing this talk. Frankly, I have always had a great deal of difficulty in preparing talks. This one has been especially difficult.

Now that I am self-employed, I have more time to read and daydream. I even read an occasional article on the day it arrives. The effect is to overload my data processing system and to lower my self-confidence about my own view of the career world. Two years ago, I gave a talk at the APA for my specialty, called "Planning for, or Drifting into Alternative Futures." I received mixed reviews. The talk was published, but my colleagues deleted portions they regarded as "undignified" or "unkind" so that other divisions would not get a bad impression of counseling psychology.

These experiences have left me in a brief dilemma. Should I give a dignified, straight talk -- filled with methodological and theoretical worries -- and in the process show that I am a sensitive 62 year old who is still able to change and develop? Or, should I proceed as usual? I decided, of course, to proceed as usual.

In doing so, I will lend more credence to my view that there is considerable stability in personality and that a couple of negative reinforcements and a new intimidating environment will have little effect on a person who has experienced a long history of positive reinforcement for occasionally saying the wrong thing at the wrong time.

My goals today are twofold:

First, I want to outline what has been learned from the application of career theory to both aspirational and work histories.

Second, I want to suggest how this knowledge might be applied to the lives of adults and to the study of adult development and aging.

Invited Address, John Holland, Division 20, APA Convention, Washington, D.C., August 25, 1982.

These goals appear important, for the average person spends most of his/her lifetime working. But in 1973, the APA-sponsored volume on adult development and aging devoted only 4 of 700 pages to work. In 1982, a prestigious book of readings devotes 19 of 432 pages to careers. A sampling of similar texts yields a similar level of interest. (Parenthetically, texts about careers have had little to say about adult development until recently and nothing to say about aging.)

In addition, there is much parallel, but independent, research about adult development and careers that should be helpful to investigators in both fields, if they looked beyond their specialty. To some degree, different specialties are going over similar problems in developing theoretical formulations, assessment devices, research methods, and treatment strategies.

The career literature provides multiple theoretical explanations of how careers are initiated, sustained, and modified. And although they differ in many ways, these structural-interactive theories share some common principles:

1. The choice of an occupation is an expression of personality and not a random event, although chance plays a role.

2. The members of an occupational group have similar personalities, and similar histories of personal development.

3. Because people in an occupational group have simlilar personalities, they will respond to many situations and problems in similar ways.

4. Occupational achievement, stability and satisfaction depend on the congruence between one's personality and the job environment.

The formulations by Lofquist and Dawis, Roe, and myself are "structural" because they have been concerned with categorizing and organizing the vast sea of information about occupations and about people for research and practice.

Consequently, all three formulations have resulted in both occupational classification systems and typologies of interests, needs, or aptitudes for assessing a person's occupational potentials.

I will try to persuade you that the application of these schemes to career aspirations and work histories provides some helpful explanations of career stability and change. Namely, stability occurs when relevant personal characteristics are expressed and rewarded in a succession of compatible jobs, and change occurs when personal characteristics become incompatible with job demands. At the same time, stability is the norm, because workers become active seekers of a limited range of congruent jobs, and because employers discourage change through common hiring practices and biases of age, appearance, sex, training, and work history.

I have divided my overview of what we know about career pathways into three topics: the importance of career data, the continuity of careers, and some explanations of stability and change. The collection of figures and tables, which I assume you have, is intended to make my talk easy to follow, to impress you, and to provide some key references.

THE IMPORTANCE OF CAREER DATA

I will begin by reminding you of the importance of career data in daily life and in research. By career data, I mean "vocational aspirations," or what people say when you ask "what occupation do you hope to follow?" "vocational interests," or what interest inventories measure; "occupation," or employment in a particular occupation; and "work history," or the succession of jobs held over a lifetime.

For most people, occupation is a major source of identity and status — before, during, and after a lifetime of working. If you are too young to work, you can have a prestigious goal; and if you are retired, you can trade in on your former occupation. Equally important, occupational status determines much, perhaps most, of one's access to social and material rewards.

Career data also have unusual research values. They are broad band variables that are related to a wide range of personality variables, self-concept measures, attitude and values measures, aptitudes and self-rated competencies, avocational activities, life history and demographic data such as age, gender, parental occupation, parental attitudes, biological heredity, and social class. It is actually difficult to find personal or life history data that are not related, at least to a small degree, to a person's vocational intentions, interests, or occupation.

For example, a casual search reveals that interests are related to cognitive style, whether you would prefer a free trip to Yellowstone or Las Vegas, whether or not you prefer to be called Ms, whether or not you would be threatened by having to write a scholarly book or having to take psychiatric patients on a recreational trip, whether or not you exhibit

left or right brain functioning, whether or not you are an accident-prone driver, whether you prefer a structured or unstructured environment, and that you are more likely to become a beautician if you are second born. For these reasons, it has been useful to construe interest inventories as personality inventories. The content is usually different, but both are helpful for understanding personality.

For research purposes, vocational interests, intentions, and work histories have some special advantages. These kinds of data form what Mohr (1982) has called "durable" variables. They provide consistent results as independent or dependent variables, and they are "important to the human condition." Of special value, these data have remarkable predictive efficiency for some important events: career choice and career shifting or patterning.

THE CONTINUITY OF CAREERS

The application of occupational classification systems to work histories demonstrates that the average career has continuity. In theoretical terms, continuity means moving between jobs that belong to the same occupational category. Continuity has also been elaborated to mean moving between jobs that belong to the same or a theoretically-related category. Without the classification systems that have come from the structural-interactive theories, careers usually appear chaotic or formless. The evidence indicates that the average person's work history becomes more stable or predictable with age. The average person's vocational interests also become more stable with age. And the average person's vocational aspirations become more stable with age. And last, vocational interests, work histories and aspirations become more differentiated or specialized with age.

For example, Roe et al. (1966) demonstrated that 68% of the job changes over a 22-year period for 804 men fell within a single category in her 8-category occupational classification. Since that time, we have accumulated many more substantial and representative studies to support this early finding. Holland et al. (1973) have replicated Roe's findings with a national representative sample of 989 males aged 30 to 39. Seventy-eight percent of the 5,812 transitions are among the same major categories in a six-category system. In the most impressive study, Gottfredson (1977) performed similar analyses of stability and change using the same six-category classification and data from the 1970 census. He shows that career stability in 5-year intervals for a nationally representative sample of females and males increases with age from 25 to 70 for both sexes. Note that

the percentages of workers moving within the same occupational category at ages 21 to 25 are 74 and 72 percent for females and males and that these percentages increase steadily with age.

The evidence for the stability of vocational interests shows the same increasing stability with age. Figure 1 in Handout 4 from Johansson and Campbell (1971) for the Strong Vocational Interest Blank is still the best single summary of this evidence. Retest results from more recent work paint a similar picture. Trust me!

The evidence for the stability of vocational aspirations is best captured in an analysis of the Project Talent data by McLaughlin and Tiedeman (1974). They demonstrate that the category of a high school student's vocational aspiration predicts the category of actual employment 11 years later. And the predictive value of aspiration increased, when predictions were made at older ages. These findings held for three different classification systems and with only trivial differences in the outcomes.

Other studies indicate that both vocational interests and careers become more differentiated or specialized with age. Specialization is somewhat predictable from earlier measures of preference or interest inventory data. Furthermore, the characteristics of particular specialties within an occupation appear consistent with some theoretical expectations, including life history data. Dunnette (1957), Helson (1978), Weil (1981) and others have shown that specialization among engineers, psychologists, and traffic control operators are both predictable and rational.

Incidentally, my piano teacher asked my help in distinguishing students who should become performers or teachers. I laughed and said, "What's the problem? If no one listens, that person is a teacher." She insisted that the distinction was more difficult, so I rummaged around in Campbell's book

and Cattell's new test manual. Sure enough, performers appear brighter but less social than teachers, although both have equal interests in things artistic.

Vocational interests also become more differentiated from about age 10 to 20 (Edwards, Holland, and Nafziger, 1974). In a longitudinal study of the interests of high school students, Taylor, Kelso, Longthorp and Pattison (1980) found that a high differentiation score based on a student's interest scores predicted greater stability of aspiration.

In short, the application of classification systems and a few hypotheses from interactive career theory strongly suggests that careers have continuity and that the differentiation of personality observed by developmentalists appears to be reproduced in career data.

Stability and Change

Now I want to argue that the interactive career theories provide some useful explanations of stability and change. A Dick and Jane summary of these ideas is that the average career is focused and stabilized both by relatively constant dispositions, special talents, expectations, somewhat irreversible choices, credentials and other baggage we acquire, and by the benign and biased environments that we encounter at every age. In contrast, career changers receive little environmental support, and they must overcome the cummulative learning associated with a particular occupation such as "I am a teacher, not an executive."

The evidence from life history, occupational effects, intervention effects, and face-to-face encounter studies as well as social class and other environmental influences suggest how careers are focused, stabilized or redirected. A sampling of these investigations appears instructive.

A range of large scale, structured biographical studies shows that people in different occupations have somewhat different life histories, interests, aspirations (Chaney and Owens, 1964, Laurent, 1951; Eberhardt, 1979), vocational needs (Lofquist and Dawis, 1969), and achievements. Kelso (in press) and Grandy and Stahmann (1974) have demonstrated that the category of a high school or college student's occupational aspiration is predictable from a small number of personal and environmental variables. Brown (1978) and others have demonstrated that a simple personal history scoring procedure predicts the yearly sales production of a life insurance applicant with moderate validity, and that the scoring key developed on applicants in 1939 works just as well for applicants in 1969. Related longitudinal studies by Flanagan (1971) and earlier by Thorndike and Hagen (1959) also illustrate how the trail of life history events and personal characteristics (especially aptitudes and interests) leads to different kinds of work.

These investigations are strengthened by studies of the biological inheritance of interests. Grotevant's et al. (1977) recent large scale investigation of families with biological and adopted children implies, as did the earlier studies of identical and fraternal twins, that vocational interests have a small inherited component. Their data even suggest that the shape of the profile is inherited. I do not mean to imply that inheritance equals immutability, but it does imply a little push in one direction as opposed to another.

Studies of worker-job interactions imply that jobs affect a worker's morale, intellectual functioning, and some dimensions of personality (Bronsseau and Prince, 1976; Kohn and Schooler, 1973). Using a small sample but a longitudinal design (8 to 10 years) Heath (1977) has reported that occupation affects a man's cognitive skills, self-concepts, and values Some of these effects appear to increase the incumbent's potential for the present

occupation and reduce potential for other occupations. In addition, workers choose and leave jobs to achieve a closer fit. For example, a study (Wiener and Vaitenas, 1977) of managers and salesmen at mid career making voluntary changes indicated that they were less ascendant and dominant than a control group of men who stayed in the same occupations. In interactive terms, they appeared less suited for their old jobs and would be expected to search for work in a more compatible situation.

These and other studies of worker-job interactions are difficult to plan and execute. Different occupations get different populations of applicants. In addition, the average worker becomes more adept with age at finding jobs that provide compatible environments so that the range of values for personal, situational and outcome measures such as satisfaction is usually limited. Fortunately, we do have experiments and experience that appear to clarify, or at least suggest how workers and jobs affect one another, and how workers may stay or move to maintain or achieve a congruent environment.

In some of these investigations, high school or college students have provided "explanations" for changing or persisting with a particular aspiration. In a longitudinal study, Nichols et al. (1964) found that both major field "stayers" and "changers," males and females, reported "interest in the course content" as the most frequent explanation for staying or changing fields. Two other investigations also imply that young people consciously pick over occupational options in terms of potential person-job interactions and that their thinking about potential interactions follows career theory.

In an investigation of the impact of a nation-wide summer program developed to encourage minority and female high school students to enter engineering, Richards et al. (1978) found that these orientation programs of

one to three weeks functioned like a typical job experience. The number of students planning to study engineering was increased--all participants had expressed an interest in engineering, but the more potential a student had for engineering, the more likely a student was to plan on engineering. Conversely, students with little potential for engineering went away believing that engineering was clearly not for them and that the experience was helpful.

An experimental study of the reaction of high school students to simulated jobs provided more explicit evidence. Helms and Williams (1973) managed to send high school students, with one of six kinds of interests, through six simulated occupational environments. Each student experienced each randomly assigned simulation and completed a scale after each experience to assess whether or not the simulated occupation would be congruent with a student's competencies, interests, values and personality traits

In short, students found the simulation that parallels their interest type to be most compatible. In addition, the degree of compatibility between student and simulated work was often in predictable order.

The recent experimental implications of the effects of various forms of vocational assistance yield another kind of evidence that militates for the relative stability of vocational aspirations or life goals. Although these interventions are planned to help people make better choices and increase the range of options, most people enter and leave these treatments with the same aspiration or a closely related one. Informed estimates center around 75%. In the same investigations, we have observed that people with high vocational identity scores report that they are considering fewer options, and that these options belong to a smaller number of main categories. Or, a clear sense of identity leads to a more focused search. Other evidence indicates that high scorers have more personal competency.

This interpretation is strengthened by Stevens' (1973) prospective studies of the job-seeking behavior of college students. She found that the most successful job applicants (higher salary, shorter search, more appropriate job) were students who had specific goals and who were characterized by ratings and inventories as independent, non-neurotic, and tough-minded.

Another group of studies implies how workers interact with one another, or how people with similar or dissimilar interests interact. These investigations of counselor-client, marital, and roomate interactions have some of the quality of person-job interactions and their outcomes.

For instance, in one study, college roomates who failed to get along, as assessed by dorm supervisors, had significantly different vocational interests. Similarly, a high school student's rating of the relationship with his counselor is high when student and counselor share similar vocational interests. Finally, two studies of marital interactions imply that they have job-like characteristics. In the first investigation, Wiggins (1980) found that marital partners seeking help had more divergent interests than a control group. In a second study, he found that second marriages, as opposed to first marriages, were characterized by greater similarity of interests as inferred from the occupation of each person.

This overview of the evidence about stability and change--especially stability--is strengthened by L. Gottfredson's monograph (1981) in which she has summarized how the aspirations of young people become circumscribed by perceptions of job-self compatibility--especially the sex type, prestige, and required effort associated with a job. These and other influences such as age, geographical location, physical limitations and the credentiating and stereotyping of applicants by employers narrow the range of opportunity

and increase the likelihood of continuity in careers. Continuity then becomes a mixture of both desirable and undesirable forces in both the person and the environment.

Parallel Theory and Related Work

This overview of the evidence lends support to the most general assumptions of interactive career theory (Lofquist and Dawis, 1969; Holland, 1973), but it also lends support to some related personality and learning theory. In addition, different researchers continue to fill in the details implied or needed by the more comprehensive formulations.

For instance, Jackson's (in press) experiments on "impressions of personality in the employment interview" imply that personnel workers and lay persons share and use a common network of ideas about occupations and personal characteristics. This work, and the earlier work on occupational stereotypes, implies in more detail how personnel workers may unwittingly press for stability in careers.

Other researchers have used learning theory to create more explicit accounts of how aspirations develop and change, to explain the meaning of vocational interests, and to explain marital relations, and adult development. Krumboltz et al. (1979) have used social learning theory to develop a comprehensive and analytical set of formulations for explaining how aspirations develop and how they change in response to environmental events. And Ahammer (1973) has advocated social learning theory as a more useful framework than stage theory for the study of adult personality development. He illustrates his work by outlining how marital partners condition one another as each acts as the environment for the other. His theoretical illustrations appear to dovetail nicely with the one-to-one interactive studies reviewed earlier. Similarity of interests would be expected to be more rewarding and

dissimilarity should lead to strain or separation. Last, Staats et al. (1973) have applied his attitude-reinforcer-discriminative theory to selected items of the Strong Vocational Interest Blank and demonstrated in three experiments that interest items have emotional-eliciting properties, that items can serve as rewards or punishments, and that measured interests can indicate the stimuli that have discriminative control over the individual's approach and avoidance behavior. Although Staats' theoretical interests are broader than the present topic, he supplies some of the most explicit data for assuming that a person's interests are useful for understanding personality, and that earlier assumptions such as "an interest inventory is a record of a person's reinforcement history" have merit. Or, in Staats' words, "an interest inventory...samples the events that have learned emotional value.."

One other theoretical link appears important in understanding careers. The reviews and findings about adult development and aging reported by Costa and McCrae (in press) appear both to strengthen the evidence for career stability and to offer some helpful explanations of stability and change. In several large scale longitudinal and cross-sectional studies, they suggest that personality traits have considerable stability for males and females over a great age range, and that the structure of personality is similar at different ages. In the process, they also go to great lengths to slay the dragons of response sets, verbal reports, cohort effects, and maturation. Their findings closely parallel those observed for the stability of interest inventories (Campbell, 1977).

Costa and McCrae (1980) also suggest that personality is the stable element within the person for "adaptation to a changing life." They test this assumption in an analysis of the male midlife crisis. The MLC scale, composed

of 10 ugly sub-scales, revealed no age differences. Instead the MLC scale was correlated with both a concurrent measure of neuroticism and measures of neuroticism obtained 10 years earlier. Other analyses of personality and life events indicate that men who were demoted, quit, or began new lines of work, among other events, were high in Openness to Experience.

These results suggest that job shifts are, in part, a function of a worker's instability or openness to new experience, or both. And, because we know the relation of these variables to vocational interests, the Costa and McCrae findings imply that people with Artistic interests (broadly construed) are more likely to change fields than people with Clerical interests, other things being equal. Similar ties between Extroversion-Introversion and vocational interests provide other translations of the findings obtained from personality inventories. For example, in these longitudinal studies, extroverts appear "happier, with more positive affect and general well being." And, in industrial investigations, achievement is often associated with social and enterprising interests--the strongest correlates of extroversion among interest inventory scales.

In short, the relatively independent literatures of personality, learning and vocational life have some common elements. They paint similar or at least compatible pictures of stability and change. The structure of personality whether it is portrayed by personality or interest inventories, appears to be stable over most of the life span. And both interest and personality inventories predict real life events.

SOME IMPLICATIONS

Now I want to outline some implications of vocational theory and substance for the study of adult development and for the provision of assistance for adults. I hesitate to do this for my knowledge of this area is limited largely to the cohort of aging psychologists I want to school with and my own aging. In addition, much counsel about research, in the long haul, turns out to be impractical, trivial or worthless, so I assume that you will observe Adam Lackey's dictum "Beware of anyone bearing theoretical, methodological or substantive gifts."

Let me begin by reiterating that work is important to most adults, Flanagan's (1977) national quality of life survey of Americans, aged 30, 50 and 70 reaffirms the importance of work at different ages. Work was important to 90 and 87 percent of men and women at ages 30, and it was still important to more than half of men and women at age 70. The study of careers and their reciprocal interactions with family and aging should become a major topic in the study of adult development rather than a neglected one.

Career theory offers some promising conceptual and practical tools for coping with the massive information about persons, work environments, and their interactions from adolescence to old age. This orientation to career problems has been applied to the careers of adults with considerable effectiveness and is now being extended to the elderly.

For example, the retirement transition and life is, from a structural-interactionist view, just another job, or movement from an institutionally-dominated environment to a more self-directed and family-dominated environment. If personal resources are moderate and if a person can express his/her repertiore of valued interests and skills in this new situation, things go well. Things go badly when people can no longer express life-long interests and

skills because they lack a compatible environment, or the personal resources to create or find a compatible environment. Different types will manage retirement with different styles and levels of competency and satisfaction. Except for the extremes, age, stage, and health would be treated as moderating but not as major explanatory variables. Other problems and transitions in adulthood such as job dissatisfaction, stress, changing jobs, marital relations, and so on are also amenable to the same formula.

The interactive models have been particularly successful with career data, because they usually include parallel schemes for characterizing both personal characteristics and environmental data. For instance, the Minnesota theory of vocational adjustment (Lofquist and Dawis, 1973) employs 20 need variables and a matching set of 20 reinforcers to characterize occupational environments. In this way, the study of person-job interactions is both clarified and simplified. Among other advantages, the parallel formulations foster the rapid accumulation of new knowledge via personal and environmental typologies or classifications.

I am not advocating the direct use of this or similar schemes, but I am implying that new structural-interactive schemes using the favorite ideas and variables of adult development researchers might also work well.

Another strategy would be to take greater advantage of career data in the study of adult development. These data have some special advantages. You can ask about a person's vocational aspirations from age 5 to 90. You can interpret a lifetime of aspirations and jobs held by using one of several classification schemes. You can characterize a person's career pathway for its stability, consistency, and achievement and infer what kinds of interests, values, personality, and competencies have been strengthened and what has been neglected.

Investigations of the rise and fall of various aptitudes in adulthood might become more informative, if subjects with clearly defined work histories were used. Aptitudes play a major role in channeling people into different occupations and then reinforcing their development for many years. Occupational classifications (Lofquist and Dawis, 1973; Gottfredson, Holland and Ogawa, in press; McCormick, 1981) provide simple but tested methods for organizing occupations into homogeneous groups for research.

The concern with crystallized and fluid abilities might be extended by the use of a more comprehensive range of aptitudes and competencies found at work--interpersonal competency, mechanical comprehension, artistic skills, decision-making, planning and so on. Although these kinds of competencies and skills are more difficult to assess, they are often more relevant for adult adjustment and achievement..

The study of aging in physiological terms and health might also benefit by the application of studied occupational classifications rather than the study of one occupation at a time or the use of committee-generated classifications such as the U.S. Census. Different occupations entail different environments with different patterns of stress and strain. And of special importance what is one person's stress, is another's satisfaction. Again, the interactive model is required.

The delivery of services to adults--young and old--should benefit from career theory. One brief example. Adult males use mental health services at a lower rate than females. Bruch and Skovolt (in press) use my delusional system to explain this gross discrepancy. Females, who are more likely to have social dispositions, find the social or therapeutic encounter more congenial than males. In contrast, males, who are likely to have skilled trades dispositions, find the social environment of the therapeutic encounter

to be especially difficult and unrewarding. These reactions are predictable from the theory--skilled trades types are described as uninsightful and asocial. This interpretation is also supported by the relations between interests and developmental measures.

Empirically, vocational interests are related to vocational maturity (Crites, 1975), Harvey's (1961) conceptual systems, and Erickson's construct of identity (Holland et al. 1980). In all three instances, skilled trades interests represent the lowest level of development, and social interests usually represent the highest level of development.

Finally, a helpful analogy for summarizing the implications of the career literature is to think of a person's career as a series of self- and other-inflicted treatments lasting 20 to 50 years. It is inconceivable that anyone escapes this experience unchanged or without a special outlook on the world and without an uneven profile of developed and undeveloped talents, interests, life goals and needs. The indices of this experience--aspirations, interests, and work histories--are major tools in the delivery of vocational assistance, but the same tools may be helpful for the study of adult development and aging.

References*

*This bibliography contains some references not cited in the talk.

Ahammer, I. M. Social-learning theory as a framework for the study of adult personality development. Chapter 11 in Life-span developmental psychology: personality and socialization. (P.B. Baltes and K. W. Schaie, eds.) New York: Academic Press, 1973.

Armstrong, P. J. The Relationship of counselor-counselee background experiences to high school students' evaluations of counseling. Doctoral dissertation, Catholic University, Washington, D.C., 1976.

Astin, A. W., & Nichols, R. C. Life goals and vocational choice. Journal of Applied Psychology, 1964, 48, 50-58.

Astin, A. W., & Panos, R. J. The educational and vocational development of American college students. Washington, D.C.: American Council on Education, 1968.

Athelstan, G. T. & Paul, G. J. New approach to the prediction of medical specialization: student-based Strong Vocational Interest Blank Scales. Journal of Applied Psychology, 1971, 55, 80-86.

Baird, L. L. The relation of vocational interests to life goals, self-ratings of ability and personality traits, and potential for achievement. Journal of Counseling Psychology, 1970, 17, 233-239.

Beardslee, D. C., & O'Dowd, D. D. The college-student image of the scientist. Science, 1961, 133, 997-1001.

Brousseau, K. R., & Prince, J. B. Job-person dynamics: an extension of longitudinal research. Journal of Applied Psychology, 1981, 66, 59-62.

Brown, S. H. Long-term validity of a personal history item scoring procedure, Journal of Applied Psychology, 1978, 63, 673-676.

Bruch, M. A., & Skovholt, T. M. Counseling services and men in need: a problem in person-environment matching. AMHCA Journal, 1981, in press.

Campbell, D. P. Handbook for the Strong Vocational Interest Blank. Stanford: Stanford University Press, 1971.

Chaney, F. B., & Owens, W. A. Life history antecedents of sales, research, and general engineering interests. Journal of Applied Psychology, 1964, 48, 101-105.

Chase, J. A. A Study of three sets of personological variables and vocational choice. Doctoral dissertation, University of Colorado at Boulder, 1980.

Costa, Jr., P. T., & McCrae, R. R. Still stable after all these years: personality as a key to some issues in adulthood and old age. Chapter in Life-Span Developmental Behavior, volume 3.

Dunnette, M. D. Vocational interest differences among engineers employed in different functions. Journal of Applied Psychology, 1957, 41, 273-278.

Edwards, K. J., Nafziger, D. H., & Holland, J. L. Differentiation of occupational perceptions among different age groups. Journal of Vocational Behavior, 1974, 4, 311-318.

Flanagan, J. C. A research approach to improving our quality of life. American Psychologist, 1978, 33, 138-147.

Flanagan, J. C., Shaycoft, M. F., Richards, J. M., Jr., and Claudy, J. C. Five years after high school. Palo Alto, California: American Institutes for Research, 1971.

Gottfredson, G. D. Career Stability and Redirection in Adulthood. Journal of Applied Psychology, 1977, 62, 436-445.

Gottfredson, G. D., Ogawa, D. K., & Holland, J. L. The Dictionary of Holland Occupational Codes. Palo Alto, California: Consulting Psychologists Press, in press.

Gottfredson, L. S. Circumscription and Compromise: A Developmental theory of occupational aspiration. Journal of Counseling Psychology, 1981, 28, 545-579.

Grandy, T. G., & Stahmann, R. F. Family influence on college students' vocational choice: Predicting from Holland's personality types. Journal of College Student Personnel, 1974, 15, 404-409.

Grotevant, H. D., Scarr, S., & Weinberg, R. A. Patterns of interest similarity in adoptive and biological families. Journal of Personality and Social Psychology, 1977, 35, 667-676.

Heath, D. H. Some possible effects of occupation on the maturing of professional men. Journal of Vocational Behavior, 1977, 11, 263-281.

Helms, S. T., & Williams, G. D. An experimental study of the reactions of high school students to simulated jobs (Research Report No. 161). Baltimore: Center for Social Organization of Schools, Johns Hopkins University, 1973. (ERIC Document Reproduction Service No. ED #087 882).

Helson, R. Writers and critics: two types of vocational consciousness in the art system. Journal of Vocational Behavior, 1978, 12, 351-363.

Holland, J. L. Explorations of a theory of vocational choice: VI. A longitudinal study using a sample of typical college students. Journal of Applied Psychology Monograph, 1968, 52 (1, Pt. 2).

Holland, J. L. Making vocational choices. Englewood Cliffs, New Jersey: Prentice-Hall, 1973.

Holland, J. L., & Gottfredson, G. D. Prediction value and psychological meaning of vocational aspirations. Journal of Vocational Behavior, 1975, 6, 349-363.

Holland, J. L., & Gottfredson, G. D. Using a typology of persons and environments to explain careers: Some extensions and clarifications. Counseling Psychologist, 1976, 6, 20-29.

Holland, J. L., Gottfredson, D. C., & Power, P. G. Some diagnostic scales for research in decision making and personality: Identity, information and barriers. Journal of Personality and Social Psychology, 1980, 39, 1191-1200.

Holland, J. L., & Nichols, R. C. Explorations of a theory of vocational choice: III. A longitudinal study of change in major field of study. Personnel and Guidance Journal, 1964, 43, 235-242.

Holland, J. L., Sorensen, A. B., Clark, J. P., Nafziger, D. H., & Blum, Z. D. Applying an occupational classification to a representative sample of work histories. Journal of Applied Psychology, 1973, 58, 34-41.

Jackson, D. N., Peacock, A. C., & J. P. Smith Impressions of personality in the interview unpublished MS.

Johannson, C. B., & Campbell D. P. Stability of the Strong Vocational Interest Blank for Men. Journal of Applied Psychology, 1971, 55, 34-36.

Kelso, G. I. Explorations of the developmental antecedents of Holland's occupational types. Unpublished doctoral dissertation, Johns Hopkins University, 1976.

Kohn, M. L., & Schooler, C. Occupational experience and psychological functioning: an assessment of reciprocal effects. American Sociological Review, 1973, 38, 97-118.

Krumboltz, J. D. A social learning theory of career decision making. Chapter 2 in Social learning and career decision making. A.M. Mitchell, G. B. Jones and J.D. Krumboltz, (eds.) Cranston, Rhode Island: Carroll Press, 1979.

Kulberg, G. E., & Owens, W. A. Some life history antecedents of engineering interests. Journal of Educational Psychology, 1960, 51, 26-31.

Kunce, J. T., & Kappes, B. M. The Vocational Preference Inventory scores and environmental preferences. Journal of Vocational Behavior, 1976, 9, 363-366.

Lofquist, L. H., & Dawis, R. V. Adjustment to work. New York: Appleton-Century-Crofts, 1969.

McCormick, E. J. Job analysis: Methods and applications. AMACOM, New York, 1981.

Marks, E. and Webb, S. C. Vocational choice and professional experience as factors in occupational image. Journal of Applied Psychology, 1969, 53, 292-300.

McLaughlin, D. H. & D. V. Tiedeman Eleven-year career stability and change as reflected in Project Talent data through the Flanagan, Holland, and Roe occupational classification systems. Journal of Vocational Behavior, 1974, 5, 177-196.

Mohr, L. B. Explaining organizational behavior. San Francisco: Jossey-Bass, 1982.

Mount, M. K., & Muchinsky, P. M. Person-environment conguence and employee job satisfaction: a test of Holland's theory. Journal of Vocational Behavior, 1978, 13, 84-100.

Nafziger, D. H., Holland, J. L., Helms, S. T., & McPartland, J. M. Applying an occupational classification to the work histories of young men and women. Journal of Vocational Behavior, 1974, 5, 331-345.

Richards, J. M., Williams, G. D., & Holland, J. L. An Evaluation of the 1977 Minority Introduction to Engineering Program. Research Report No. 270. CSOS, Johns Hopkins University, Baltimore, Maryland 21218

Roe, A. The psychology of occupations. New York: Wiley, 1956.

Roe, A., Hubbard, W. D., Hutchinson, T., & Bateman, T. Studies of occupational history Part I: Job changes and the classification of occupations. Journal of Counseling Psychology, 1966, 13, 387-393.

Rounds, J. B. Jr., Dawis, R. V., & Lofquist, L. H. Life history correlates of vocational needs for a female adult sample. Journal of Counseling Psychology, 1979, 26, 487-496.

Staats, A. W., Gross, M. C., Guay, P. F., & Carlson, C. C. Personality and social systems and attitude-reinforce-discriminative theory: Interests (attitude) formation, function, and measurement. Journal of Personality and Social Psychology 1973, 26, 251-261.

Stevens, N. D. Job-seeking behavior: a segment of vocational development. Journal of Vocational Behavior 1973, 3, 209-219.

Roe, A., Hubbard, W. D., Hutchison, T., & Bateman, T. Studies of occupational histories: Part I. Job changes and the classification of occupations. Journal of Counseling Psychology, 1966, 13, 387-393.

Taylor, C. W. & Ellison, R. L. Biographical predictors of scientific performance. Science, 1967, 155, 1075-1080.

Taylor, K. F., Kelso, G. I., Longthorp, N. E., & Pattison, P. E. Differentiation as a construct in vocational theory and a diagnostic sign in practice. Melbourne Psychology Reports No. 68, Dept. of Psychology, University of Melbourne, 1980.

Thorndike, R. M., Weiss, D. J., and Dawis, Rene V. Multivariate relationship between a measure of vocational interests and a measure of vocational needs. Journal of Applied Psychology, 1968, 52, 491-495. (b)

Thorndike, R. and Hagen, E. 10,000 Careers. New York: John Wiley, 1959.

Walsh, W. B. Consistent occupational preferences and personality. Journal of Vocational Behavior, 1974, 4, 145-173.

Weil, P. A., Schleiter, M. K., & Tarlov, A. R. National study of internal medicine manpower: V. Comparison of residents in internal medicine—future generalists and subspecialists. Annuals of Internal Medicine, 1981, 94, 678-690.

Werts, C. E. Paternal influence on career choice. Journal of Counseling Psychology, 1968, 15, 48-52.

Wiener, Y., & Vaitenas, R. Personality correlates of voluntary midcareer change in enterprising occupations. Journal of Applied Psychology, 1977, 62, 706-712.

Wiggins, J. D. The relation of job sacisfaction to vocational preferences among teachers of the educable mentally retarded. Journal of Vocational Behavior, 1976, 8, 13-18.

Wiggins, J. D., & Weslander, D Expressed vocational choices and later employment compared with Vocational Preference Inventory and Kuder Preference Record Vocational scores. Journal of Vocational Behavior, 1977, 11, 158-165.

Wiggins, J. D , & Weslander, D. C. Personality characteristics of counselors rated as effective or ineffective. Journal of Vocational Behavior, 1979, 15, 175-185.

Wiggins, J. D., & Weslander, D. L. Tested compatibility in first and second marriages. American Mental Health Counselors Association Journal, 1982, January, 25-29.

Williams, J. E. Conflict between freshman male roommates. Research Report No. 10-67 Counseling Center, University of Maryland, College Park, 1967.

Table 7

Mean Income of White Men 36-65: By Education and Type of Work

Type of Work	Years of Education					
	8 or fewer	9-11	12	13-15	16 or more	Total
Real	7,309	8,533	9,325	10,067	14,141	8,674
Inv	7,862	9,372	10,914	12,206	21,946	15,729
Soc	7,301	8,609	9,427	10,464	12,304	10,868
Ent	9,788	11,607	12,599	14,628	20,796	14,623
Conv	7,792	9,154	9,770	10,839	15,360	10,906
Total[a]	7,614	9,169	10,372	12,364	18,123	11,054

[a] Includes men in artistic work.